

Application No.: 09/731,460**Atty Docket: HBES 1028-1****In the Claims:**

Claims 1-22 are pending in this application, and the status of each is listed below.

What is claimed is:

1. (currently amended) An imaging system comprising:

an imager having an array of photocells, where each photocell produces an electrical response to light exposure, and the electrical responses of the array of photocells together represent spatial frequency-domain image data representing an object illuminated with an incoherent light source; and

an image processor that receives the spatial frequency-domain image data from the imager and transforms the spatial frequency-domain image data into spatial-domain image data, thereby reconstructing an image of the object.

2. (original) The imaging system of claim 1, where the spatial frequency-domain image data contains noise, the system further comprising a filter that detects and removes the noise before the system transforms the spatial frequency-domain image data into spatial-domain image data.

3. (original) The imaging system of claim 1, further comprising a user interface that displays the spatial-domain image data.

4. (original) The imaging system of claim 1, further comprising an optical lens placed between a spatial representation of an image object and the imager, the optical lens performing an approximate Fourier transform on light emanating from the spatial

Application No.: 09/731,460

Atty Docket: HBES 1028-1

representation of the image object toward the imager.

5. (original) The imaging system of claim 4, where the spatial representation of the image object is provided by a spatial light modulator.

6. (original) The imaging system of claim 4, further comprising a coherent light source for illuminating the spatial representation of the image.

7. (currently amended) The imaging system of claim 1, further comprising:
a focusing lens and a transform lens that are placed between the imager and an image object;

light traveling from the image object to the imager;

the focusing lens focusing the light onto an image plane between the focusing lens and the transform lens;

the transform lens receiving the light from the focusing lens and bending the light to form a diffraction pattern of the image object at a transform plane of the transform lens;
and

the imager being placed at the transform plane of the transform lens to capture the diffraction pattern of the image object. [.]

8. (original) The imaging system of claim 7, further comprising a user interface that permits a user to adjust distances between the focusing lens, the transform lens, and the imager.

Application No.: 09/731,460

Atty Docket: HBES 1028-1

9. (original) An imaging system comprising:

digital imaging means for capturing a diffraction pattern of an object illuminated by an incoherent light source;

digital imaging means for producing digital spatial frequency-domain image data corresponding to the captured diffraction pattern of the object; and

means for converting the spatial frequency-domain image data into spatial-domain image data suitable for spatial image display of the object.

10. (original) The imaging system of claim 9, further comprising means for detecting and removing noise from the spatial frequency-domain image data.

11. (original) The imaging system of claim 9, further comprising means for displaying a spatial image of the object.

12. (original) The imaging system of claim 9, further comprising means for storing the spatial-domain image data of the object.

13. (original) The imaging system of claim 9, further comprising user interface means for controlling an amount of time for capturing the image.

14. (original) The imaging system of claim 9, further comprising user interface means for controlling an amount of illumination for capturing the image.

15. (currently amended) A method that minimizes point defects in an image,

Application No.: 09/731,460

Atty Docket: HBES 1028-1

comprising:

capturing a diffraction pattern of an image object illuminated by an incoherent source;

producing digital spatial frequency-domain image data corresponding to the captured diffraction pattern of the object; and

converting the spatial frequency-domain image data to a spatial domain, thereby reconstructing an image of the object.

16. (original) The method of claim 15, further comprising detecting and removing noise from the captured spatial frequency-domain image data.

17. (original) The method of claim 15, further comprising transferring the spatial frequency-domain image data to an image processor, the image processor inverse Fourier transforming the frequency-domain image data to a spatial domain.

18. (original) The method of claim 15, further comprising placing a transform lens between an image object and the digital imager, the transform lens performing an approximate Fourier transform on light traveling between the object and the digital imager.

19. (original) The method of claim 15, further comprising storing the spatial-domain image data in digital memory.

20. (original) The method of claim 15, further comprising displaying the spatial-domain image data.

Application No.: 09/731,460

Atty Docket: HBES 1028-1

21. (original) An imaging system comprising:

means for capturing an image in the spatial frequency domain;

means communicatively coupled with the capturing means for creating a digital representation of the spatial frequency components of the captured image; and

means communicatively coupled with the digital representation creation means for transforming the digital representation of the spatial frequency components into spatial-domain image data.

22. (original) A system for minimizing point defects in an image, comprising:

means for capturing a diffraction pattern of an image object;

means communicatively coupled with the capturing means for producing digital spatial frequency-domain image data of the captured diffraction pattern of the object; and

means coupled with the data-producing means for converting the spatial frequency-domain image data to a spatial domain.